MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2017/2018

TIC3251/TDS3281 – DECISION SUPPORT SYSTEMS

(All Sections / Groups)

14th MARCH 2018
9.00am-11.00am
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 5 pages with 5 Questions only.
2. Attempt **ALL** questions. All questions carry equal marks and the distribution of the marks for each question is given.
3. Please print all your answers in the Answer Booklet provided.

Question 1

(a) Provide TWO main reasons why Prescriptive Business Intelligence capabilities are viewed as more powerful than Predictive Business Intelligence. (2 marks)

(b) Describe and define Big Data. Why is a search engine a Big Data application? (3 marks)

(c) One of the top executives in an accounting firm is responsible to recruit new employees.

(i) Please identify the Type of Decision and Type of Control of this decision support activity according to the Gorry and Scott-Morton Classical Framework. (2 marks)

(ii) Please provide another similar activity which belongs to this cell in the matrix. (1 mark)

(d) For Decision Support Systems, why are semi-structured or unstructured decisions the main focus of support in making a decision? (2 marks)

Question 2

(a) Provide THREE main reasons why the deployment of large data warehouses with terabytes or even petabytes of data have been crucial to the growth of decision support systems. (3 marks)

(b) Microsoft Excel can be an efficient tool for developing a Decision Support System. In comparison with using a programming language like C++, provide a shortcoming of Excel. (2 marks)

(c) According to Simon (1977), most human decision making, whether organizational or individual, involves a willingness to settle for a satisfactory solution, "something less than the best." This is called satisficing. How does a decision maker handle satisficing? (3 marks)

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(d) What kind of chart is helpful to show relative proportions of dollars per department allocated by a university administration? (2 marks)

Question 3

(a) In estimating the accuracy of classification models, what does the true positive rate mean? (2 marks)

(b) What are the differences between nominal and ordinal data? Give ONE example for each type of data. (4 marks)

(c) Each Artificial Neural Network (ANN) is composed of a collection of neurons that are grouped into layers. One of these layers is the hidden layer. Define the hidden layer. (2 marks)

(d) State TWO common sources of traffic to your web site. (2 marks)

Question 4

(a) What is search engine optimization (SEO) and why is it important for organizations that own Web sites? (4 marks)

(b) The two fundamental approaches to knowledge management are the process approach and the practice approach. Explain the difference between them. (2 marks)

(c) List TWO reasons why it is difficult to acquire knowledge from experts. (2 marks)

(d) Suggest TWO characteristics of the complex problems which are most suited to be solved using simulation. (2 marks)

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Question 5 – Please refer to the Case Study below and answer all questions.

Analyzing Athletic Injuries

Any athletic activity is prone to injuries. If the injuries are not handled properly, then the team suffers. Using analytics to understand injuries can help in deriving valuable insights that would enable the coaches and team doctors to manage the team composition, understand player profiles, and ultimately aid in better decision making concerning which players might be available to play at any given time.

In an exploratory study, Oklahoma State University analyzed American football-related sport injuries by using reporting and predictive analytics. The project followed the CRISP-DM methodology to understand the problem of making recommendations on managing injuries, understanding the various data elements collected about injuries, cleaning the data, developing visualizations to draw various inferences, building predictive models to analyze the injury healing time period, and drawing sequence rules to predict the relationship among the injuries and the various body parts afflicted with injuries. The injury data set consisted of more than 560 football injury records, which were categorized into injury-specific variables-body part/site/laterality, action taken, severity, injury type, injury start and healing dates – and player/sport-specific variables-player ID, position played, activity, onset, and game location. Healing time was calculated for each record, which was classified into different sets of time periods: 0-1 month, 1-2 months, 2-4 months, 4-6 months and 6-24 months. Various visualizations were built to draw inferences from injury data set information depicting the healing time period associated with players 'positions, severity of injuries and the healing time period, treatment offered and the associated healing time period, major injuries afflicting body parts and so forth.

Neural network models were built to predict each of the healing categories using IBM SPSS Modeler. Some of the predictor variables were current status of injury, severity, body part, body site, type of injury, activity, event location, action taken, and position played. The success of classifying the healing category was quite good: Accuracy was 79.6 percent. Based on the analysis, many business recommendations were suggested, including employing more specialists' input from injury onset instead of letting the training room staff screen the injured players; training players at defensive positions to avoid being injured; and having safety-check mechanisms.

Source: Business Analytics: Research and Teaching Perspectives , http://iti.srce.unizg.hr/docs/iti2013/Sharda.pdf

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(a) What types of analytics are applied in the injury analysis? (3 marks)

(b) How do visualizations aid in understanding the data and delivering insights into the data? (2 marks)

(c) What is a classification problem? Provide an example derived from the case study. (3 marks)

(d) What can be derived by performing sequence analysis? (2 marks)

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